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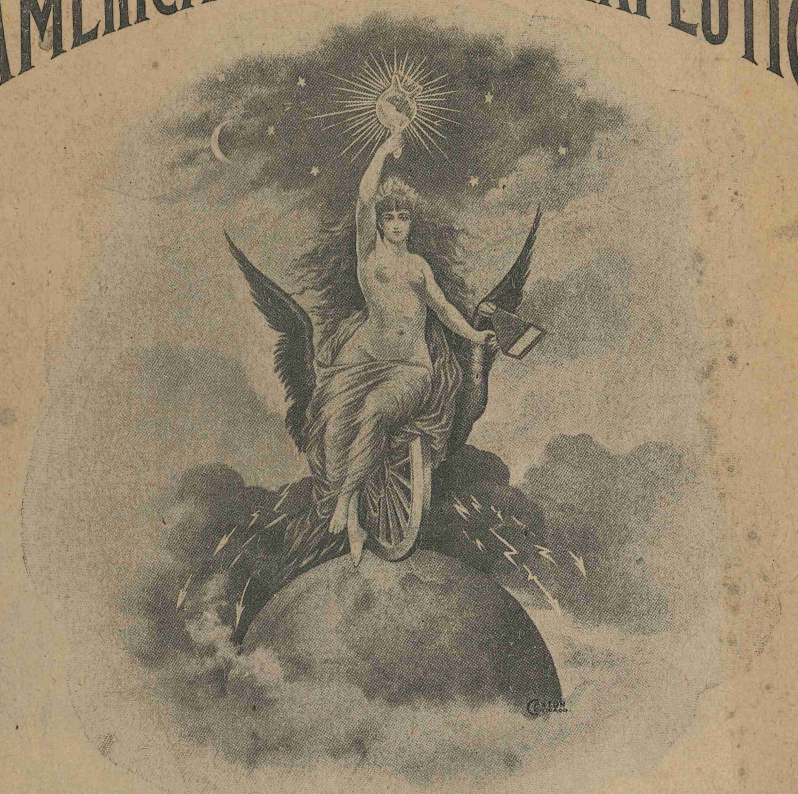
AMERICAN ELECTRO-THERAPEUTIC



AND X-RAY ERA

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THIS JOURNAL IS DEVOTED ENTIRELY TO ALL BRANCHES OF ELECTRO-THERAPEUTICS

Contributions of actual experience by physicians using the X-Ray as a therapeutic agent are highly valued by this journal, and the editor is always willing to reserve space for such communications.

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American Electro-Therapeutic and X-Ray Era

Vol. III April, 1903 No. 4

Original Contributions

THE X-RAY AS A DIAGNOSTIC AGENT IN TWO OBSCURE LESIONS—IMPROVEMENT IN A TUBERCULAR JOINT UNDER RADIATION.

BY DR. RUSSELL H. BOGGS, EMPIRE BUILDING, PITTSBURG, PA.

Case I.—Mr. J. H., aged 29, has had the diseases of childhood, and seven years before admission to the Allegheny General Hospital, contracted syphilis. He had used alcohol to excess until three months before his admission to the hospital, and tobacco incessantly.

When four years of age this patient was struck above the right eye, but recovered from the injury without any surgical interference. Two months before admission to the hospital he began to complain of pain over the right eye and ear; staggering when walking; insomnia, partial loss of memory; and occasional attacks of vomiting, which were becoming more frequent. There was a small pulsating tumor over right eye.

Examination by Dr. Duncan revealed atrophy of the optic nerve of both eyes; blood vessels reduced to one-half the normal size, and paresis of the ocular-motor nerves. The urine, specific gravity 1028, contained a few white blood corpuscles but no sugar or albumen. This patient was put on ascending doses of potassium iodide which was continued until he was taking one dram three times a day.

This case was referred by Drs. King and McAboy for an X-ray examination. A radiograph was taken which showed

the abnormal dark shadow on the plate, or a light shadow on the print, extending from the antero-temporal to the posterior occipital region as shown by the radiograph.

No diagnosis was made, but the radiograph (See Fig 1.) would suggest that some degeneration of the table of the skull had taken place; because, in order to have a darker shadow on the plate or a lighter shadow on the print there must be a lesser density where this shadow occurs on the radiograph than in the surrounding tissues. This radio-

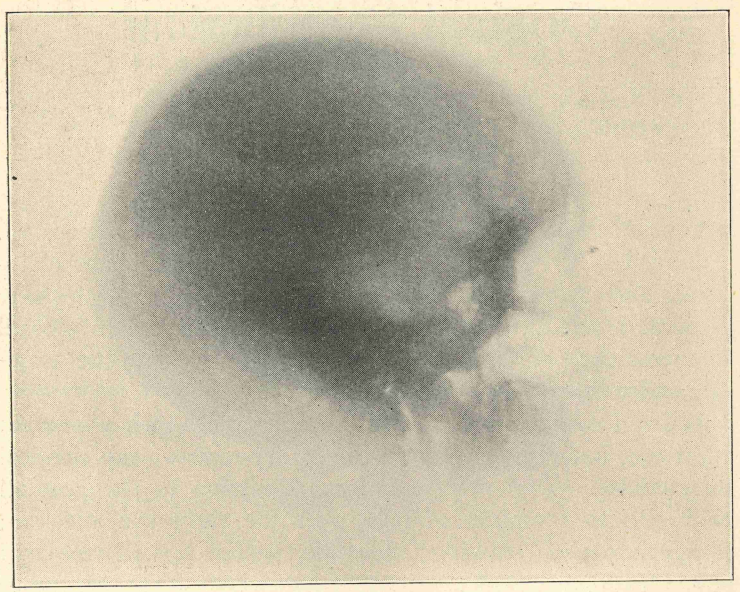

FIG. 1.

graph was verified by two others, so the shadow could not have been produced by an imperfection in the plate.

CASE II.—Mr. O., age 23, victim of peculiar attacks since July, 1902, occurring on an average of five or six times a day, but lately only at night. These attacks lasting from three-quarters of a minute to a minute, with the jaws tightly closed, tongue not bitten, preceded by no headache or cry, but followed by drowsiness. He always presses his hands over head and face during an attack.

On examination his pupils were found to be large and mobile, reflexes normal, heart-beat rapid and strong, but his left lung was not performing its functions properly. There was an elevation of temperature every day from 1-5 to 4-5 of a degree.

This case was referred by Dr. McKennan to verify his diagnosis that the left lung was not performing its functions properly; however, no dullness was found on percussion. The

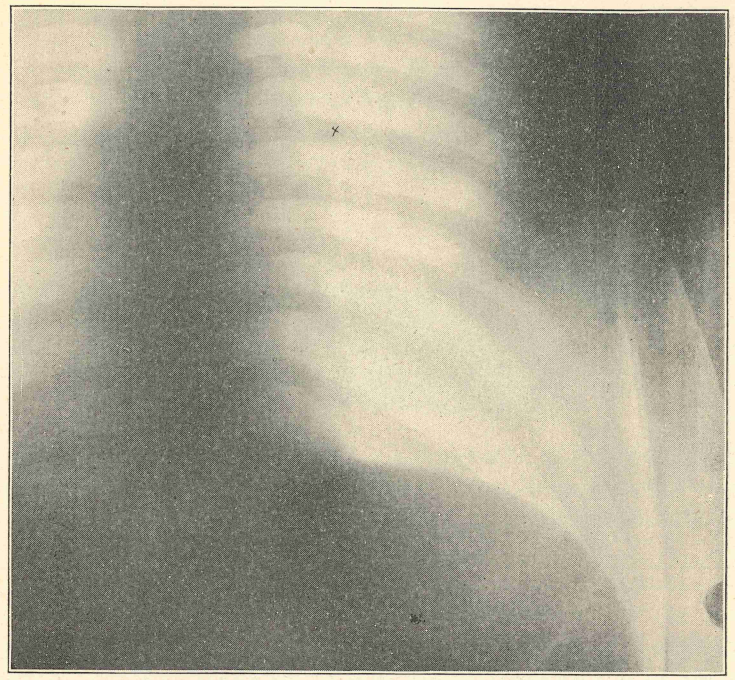

FIG. 2.

diagnosis was epilepsy, caused by tubercular trouble in the brain.

A radiograph was taken (See Fig. 2.) which showed a solid spot in the left lung about the size of a dollar. In order to take this picture while the lung was at rest it was necessary to make a short exposure, which was twenty seconds with 40 amperes going through the primary of a fifteen inch coil. This exceedingly heavy discharge was passed through a medium tube placed at a distance of twenty-four inches from the plate.

CASE III.—Miss C., age 16, had been healthy and attending school when an abscess appeared at her elbow joint. The physician lanced the abscess, but as it had not healed three months later, he referred the patient for an X-ray examination, as there was a certain amount of ankylosis. The mother and aunt of this patient died of pulmonary tuberculosis.

A radiograph (See Fig. 3) revealed a tubercular joint, the lower end of the humerus being involved. X-ray therapy was decided upon and a treatment was given every other

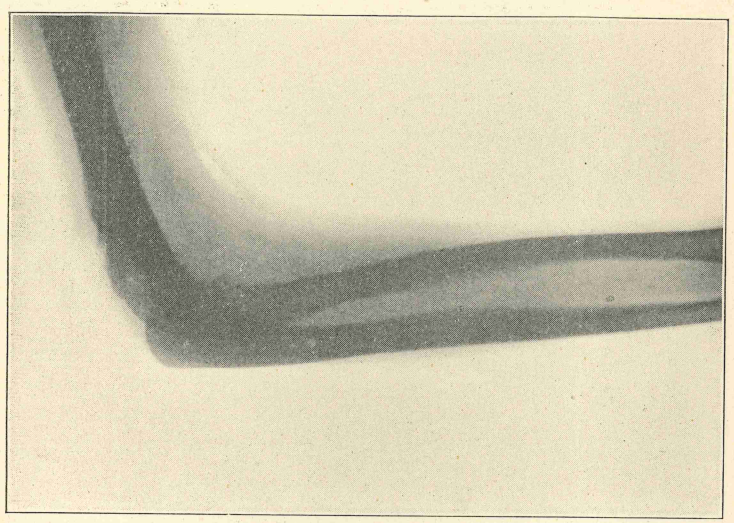

FIG. 3.

day for a period of six weeks. A fifteen inch coil with from eight to ten amperes going through primary, and a low tube which would back up a spark of two and a half inches was used. The sittings at first were of five minutes duration, but were soon increased to ten minutes. About the time the radiograph was taken an abscess appeared just above left breast; this abscess was given the same treatment.

At the end of six weeks the patient left the city, much improved and intends to follow up the treatment on her return.

ELECTRICITY IN GYNECOLOGY.*

BY EMIL H. GRUBBE, B. S., M. D., CHICAGO, ILL.

Professor of Radiography, X-Ray Therapeutics, and Electrophysics, Illinois School of Electrotherapeutics; Chief Radiographer, Illinois X-Ray and Electrotherapeutic Laboratory, Etc.

The value of electricity in medicine is daily more and more appreciated.

If we recognize the statements made by such eminent men as Apostoli, Sir Spencer Wells, Thomas Keith, Massey, Goffe and Franklin H. Martin, we must conclude that no department of medicine has benefited more through the application of electricity than that of Gynecology.

The writer does not intend to give an exhaustive study of all the various uses to which electricity may be applied in this particular branch of medicine, but simply histories and reports of cases treated by electricity in one form or other, viz.: Galvanism, Faradism, Static Electricity or X-rays.

In treating this class of cases of course it must always be remembered that the personal equation enters largely as a factor in obtaining **good results.** One operator exercising care and common **sense will** obtain results which will be impossible to another **who is** reckless and who uses a stereotyped form of treatment for all cases, ignoring entirely the matter of individuality.

The fact that most of the cases reported here were made well by electric treatment alone, is not brought out for the purpose of conveying the idea that electric treatment is infallible or that it is a panacea. Not at all. Our object is merely to hold it up for inspection, for in selected cases electricity has its field and is able to cope with other therapeutic measures for recognition in the treatment of organic as well as functional diseases of women.

GALVANISM.

The field which Galvanism occupies in the treatment of pelvic diseases is quite extensive. For, we have in the opposite action of the Galvanic poles ability to treat local hyperaemic

* Paper read before the Chicago Electro-Medical Society, March 31st, 1903.

conditions as well as local anaemic conditions. With the positive pole we are able to control and limit the circulation of an organ because of the well known vaso-constrictor property possessed by this pole. On the other hand, by means of the negative pole we may dilate the blood vessels of an organ and thus establish ability to take care of the products of metabolism.

We have used Galvanism with great success in many uterine and pelvic troubles, viz.: amenorrhea, dysmenorrhea, fibroid tumors, inflammatory states of the uterus and its appendages, stricture of the os uteri and of the urethra, and also in the treatment of the results of that worst enemy to woman's health—gonorrhea.

Galvanism has been especially successfully applied to the various menstrual disorders.

When we remember that menstruation is a nervous phenomena, that its rhythmic order is due to and is controlled by the sympathetic nervous system, which in turn controls the glandular as well as the vascular systems, we can readily understand why electricity, which affects primarily the nervous system, should bring about good results.

Case I.—*Menorrhagia*—due to interstitial uterine fibroids. Miss C., aged 36, had suffered for five years with intense colicky pains at the menstrual period, which occurred every 30 days. Pain usually so severe that regular confinement in bed for 4 days was necessary. At times she would become unconscious from pain. Profuse hemorrhages occurred after establishment of the period, and occasionally between the periods. Examination disclosed uterine fibroid affecting the anterior uterine wall just within the internal os. Due to the fact that the growth was not very large and the patient did not care to undergo a surgical operation, Galvanism was resorted to. Personally we believed in this case the current would be rather palliative than curative, but after treatment extending over a period of four months most of her symptoms had disappeared and she considers herself comparatively well. Local examination now does not disclose the fibrous formation in the uterus. Her pains are practically gone and therefore we are led to believe that Galvanic current has actually cured her.

The technique of the treatment was as follows: A copper olive slightly smaller than the caliber of the os was inserted into the uterine cavity and attached to the positive pole of the Galvanic circuit. A large felt electrode (10-in. diameter) and attached to the negative pole was placed over the pubis. Gradually the rheostat was cut out until the patient was receiving 30 mill. amp. The seance lasting 10 minutes. Treatments were given twice each week. The risk of doing any harm by this method is reduced to a minimum. No doubt when surgical operation is refused it is the best expectant treatment which we possess at the present time, and is to be preferred to drugs or curettage.

It is very necessary in giving this treatment to remember that electrolysis and not cauterization is desired. Mild currents given for a long period of time will, due to the cutting off of blood supply, favor absorption of abnormal tissues. Strong currents burn and even destroy normal tissue and therefore should not be used unless a cauterizing effect is desired, which is hardly allowable in the treatment of these conditions.

Case II.—*Dysmenorrhea*—due to cervical stenosis. Mrs. M., aged 28. Menstruates every 28 days. Never been pregnant. This patient complained of premenstrual pain in the pelvic region. These pains were always paroxysmal, expulsive "cramplike," radiating through pelvis, back and thighs, and accompanied with nausea. Pains would come on several hours before flow was expected and continued throughout the period. Examination four days after menstrual period revealed stenosis of the uterine canal. Treatment: A nickel olive of suitable size was selected and attached to the negative pole of the Galvanic circuit and introduced into the cervical canal. 10 mill. amp. were given for 8 minutes when the olive had passed into the uterus. This treatment was repeated every other day, each time using, if possible, an olive of larger caliber, until six treatments had been given. At the next period very slight pain or discomfort was experienced and after the period the patient returned for three more treatments. By this time the canal was considered sufficiently dilated to stop treatments. This patient reports frequently, but has had no return of the dysmenorrhea.

CASE III.—*Dysmenorrhea—membraneous.* Mrs. G., aged 32. For years this patient had been troubled with membraneous dysmenorrhea, and although she had consulted many physicians and tried many forms of treatment, she had received comparatively little benefit. She complained of labor-like pains commencing with the flow and increasing in severity until shreds of a thin membrane passed. Following this for two days there appeared a purulent discharge. She had refused curettage and caustic treatment, but was finally convinced that Galvanic cauterization, i. e., electric curettage, could be performed without occasioning much pain, and she consented to try it.

Treatment: Two weeks preceding the menstrual period Galvanism was resorted to. An intra-uterine electrode of copper attached to the negative pole was inserted and gradually the rheostat was cut out until 60 mill. amp. were allowed to pass—the seance lasting 20 minutes. The current was now turned off and the electrode forcibly withdrawn. This same treatment was repeated the third day following and again three days later. At the next period the usual labor-like pains had been replaced by very mild pains and no membrane was passed. Treatments were continued as before and the following period was passed without the development of any disagreeable symptoms. At the present writing four periods have been passed in comfort and without the appearance of any membrane and we may say the patient is cured of her trouble.

CASE IV.—*Acute vulvo-vaginitis—due to gonorrhea.* Miss R., aged 26. Patient complained of dull pain in groin. Burning and intense itching in vagina accompanied by profuse discharge. Local examination revealed decided inflammation and tenderness over entire vulval and vaginal mucous membrane; profuse yellow discharge, which upon analysis was found to contain gonococci. Treatment: Mucous surfaces were thoroughly cleansed with hot saturated solution of boric acid. A large copper vaginal electrode was attached to the positive pole of the Galvanic circuit and then placed in contact with all accessible parts of the vaginal mucous membrane until a decided green color was developed in the tissues—the electrode was moved from place to place until all the diseased surface had been treated. Due to the large surface treated at one sitting considerable pain developed. Heroic treatment, however, was allowable, considering the character of the disease. The vagina was then packed with plain gauze and the patient was asked to return in three days. Even though the treatment had been vigorous the patient reported much improvement and was perfectly willing to undergo similar treatment if found necessary. On examination several small inflammatory areas were detected and the previous treatment was again resorted to. One week later the patient returned for examination and no symptoms could be obtained. The patient has presented herself for examination several times since and no return of disease has occurred.

CASE V.—*Urinary Fistula.* Mrs. R., aged 21. This patient complained of dribbling of urine from the vagina. This condition existed since the birth of her first child over a year ago. Upon examination the vaginal mucous membrane was found very much excoriated. The vaginal walls were extremely tender to the touch and upon the anterior border a small elongated tear indicated urethral communication. Treatment: The vulva and vagina were carefully cleansed with warm boric acid solution. Fistular area carefully cleansed with the same solution, and a copper wire electrode the size of the fistulous opening attached to the positive pole of the Galvanic circuit applied. 20 mill, amp. of current was allowed to pass for 10 minutes. This was sufficient to cause a considerable quantity of copper to decompose in the fistulous tract, the walls of the cavity appearing green in color. The vagina was then packed with plain gauze to prevent further excoriation of vaginal mucous membrane. This procedure was repeated in a week, during which time the patient was very much improved. One week later a third application was made in the same manner and one week later the patient returned perfectly well, every symptom having disappeared.

FARADISM.

The use of Faradism is somewhat more limited than Galvanism in Gynecology. The Faradic current is purely functional in its action, whereas the Galvanic current has a func-

tional as well as an organic or chemic effect upon the tissues to which it may be applied.

Faradism is of decided value whenever we wish to restore the functions of muscular tissues. Such affections as prolapsis, subinvolution, versions and flexions and undevelopment of the uterus are favorably influenced by this form of electricity.

CASE VI.—*Subinvolution.* Mrs. G., aged 25. Patient said she had been exceptionally well until the birth of her child seven months ago. Since then she has complained of backache and pains in the pelvis, bearing down and feeling as though something could be pushed out of the vagina. Has had constant discharge usually of yellow color, but sometimes also bloody. Feels very weak; is unable to do housework. Has lost considerable flesh. Bowel movements very irregular, usually constipated, also irritability of bladder. Examination: Uterus very much enlarged, extremely sensitive and filling almost entire vaginal cavity. Os considerably dilated and discharging profusely. Treatment: By means of a bipolar intra-uterine electrode applications of Faradic electricity were made daily, using slow interruptions (50 per minute) from the secondary coil for 15 minutes. After 20 applications practically all symptoms for which the patient sought relief had disappeared and she was discharged well.

CASE VII.—*Infantile Uterus.* Miss V., aged 30. Did not begin menstruating until she was 20 years old. Since then has had very irregular and painful periods and the flow has been very scanty. Was well nourished, and considered herself quite well until two years ago, when she began to show signs of anemia. Was getting rapidly worse. Pulmonary tuberculosis was suspicioned, but examination was negative. Pelvic examination revealed a small, imperfectly developed uterus about the size of her thumb. No discharge and no inflammatory process could be found. The conclusion was that all her trouble was due to a defective development of the uterus.

Realizing that someone has said that patients of this class are "usually a burden to themselves and may be considered useless to society," we undertook to treat this patient with some trepidation. Indeed we promised nothing. An extra small bipolar intra-uterins electrode was introduced into the

uterus and connected to the primary coil of the Faradic circuit. Slow contractions were produced (20 per minute). The treatments lasted 10 minutes each. After four months of this treatment, during which 30 seances were given, the uterus has developed twice in size, the periods have now been regular for three months, the flow has been quite free each time and the patient has gained 20 pounds in flesh. Indeed she feels so well that she has changed her idea of life and is seriously contemplating marriage.

STATIC ELECTRICITY.

We possess in Static Electricity a very valuable therapeutic measure. It is used principally as a function regulator and as such is one of the greatest stimulants and tonics known. Many of the ailments of women are due to disturbed normal circulation; are purely functional and therefore any agent which can equalize the circulation must be deemed of decided value in the treatment of gynecological cases.

CASE VIII.—*Chronic Constipation*—due to inactivity of the lower bowel. Mrs. A., aged 38. This patient had been troubled with constipation for nearly 15 years. Would not have a bowel movement in two or three days unless large quantities of cathartic medicines or enemas were resorted to. Three years ago she had an operation for the removal of one ovary, following which extensive adhesions involving the bowel occurred which aggravated the constipated condition very much and caused intense pains at intervals. She was referred to us for electric treatment in the hope that the pelvic adhesions and general inactivity of the bowel could be remedied. After examination we decided to apply Static surgings locally to the rectum. The patient was placed upon an insulated table and lying on her side, an ordinary copper rectal electrode was inserted. This electrode was attached to one pole of the Static machine, the other being grounded. In giving this treatment small sized Leyden jars are attached to the machine; the prime conductors are placed about one-fourth inch apart and gradually withdrawn until pronounced muscular contractions occur with the passage of each spark between the prime conductors. The machine should be run very slowly; only about 30 to 40 sparks should pass per minute. Treatment lasts

5 to 10 minutes, according to individuality. After receiving twelve surging treatments this patient considered herself entirely relieved from constipation, in fact, she has not found it necessary to resort to cathartics or enemas once during the past three months.

CASE IX.—*Pelvic Adhesions*—following operations. Mrs. V., aged 20. Operated upon over a year ago for a left ovarian cyst. Following this operation adhesions developed to such an extent that another operation was performed, as she presumes, for the relief of the adhesions. No relief followed. Six months ago her physician decided that electricity offered the only hope of relieving her condition. Upon examination patient complained of obscure pains in the pelvis, referred sometimes to the uterus and at other times to the left ovarian region. The entire abdominal and pelvic regions were extremely sensitive to the touch. Vaginal examination revealed extensive band-like adhesions on the left side. Careful examination of the mental condition of this patient was also made to eliminate the factor of hysteria, which is many times a post-operative development. This examination, however, was entirely negative and the conclusion was that her pains were actual and entirely due to the adhesions in the pelvic cavity. Her treatment consisted of the use of both Static surgings and negative Galvanism. The Galvanic current was administered locally through a vaginal electrode placed in contact with the adhesion bands, using 10 mill. amp. for 10 minutes every other day. The Static surgings were applied by placing a metal band around the pelvis, next to the skin and this band then connected to the machine. This current was alternated with the Galvanic. Decided benefit followed a few treatments, but due to the fact that the patient had to leave the city our report is incomplete in this case.

X-RAYS.

CASE X.—*Epithelioma of the Cervix.* Mrs. G., aged 40. This patient gave the classic history which is so characteristic of epithelioma. Married at 20. First child at 22; laceration of cervix resulted, but was never repaired. Frequent miscarriages for several years; several of them self-produced, followed by another birth and more lacerations. Leucorrhea

ever since first birth. Patient finally became so weak that local treatments were undertaken and an "ulcer" of the cervix was discovered. This, however, did not get well under treatment and patient became discouraged and stopped all medical treatment for three years. Her friends implored her to seek aid again and on doing so her physician discovered an extensive ulcer, a portion of which upon analysis proved to be an epithelioma. The patient was now sent to us for X-ray treatment. Since the parts were readily exposed to view through the speculum, it was thought advisable to apply the X-ray per speculum. For this purpose a celluloid Ferguson speculum was used walling off the vaginal mucous membrane. Externally the neighboring parts were protected by X-ray foil. We believe in "burning" all ulcerated surfaces under X-ray treatment and therefore applied the ray in a vigorous manner. After twelve exposures a slight irritation made itself manifest and after twenty treatments the "burn" appeared so decided that further treatment was postponed. The patient was told to return for examination weekly and after three months the "burn," as well as the epithelioma, had entirely disappeared.

We have had several similar cases, in all of which "symptomatic" cures have been performed. Whether these cures will be permanent or not time only can determine. If, however, the primary condition should return, we can resort to the X-ray again.

CASE XI.—*Epithelioma of the Vulva.* Miss L., aged 29. Three years ago patient noticed a small, hard, warty growth upon the vaginal wall near the clitoris. The growth was not very painful and therefore was given only passing attention. However, in the course of six months after she first discovered her condition she became gradually worse and upon consulting a physician was told that an ulcer had formed and since he did not suspect anything but syphilis she was accordingly treated for specific trouble. After remaining under this treatment for several months no improvement could be detected, in fact, she was gradually growing worse. Finally a section of the growth was made and upon analysis epithelioma was diagnosed. X-ray treatment was advised and undertaken, the technique being much the same as in the previous case.

After ten daily treatments decided inflammatory symptoms developed and further treatment was postponed until this had subsided. After 15 days a decided change for the better could be seen and the X-ray treatments were again applied. Eight daily seances were given before the "burn" appeared the second time. Again she rested and after three weeks both the "burn" and epithelioma had disappeared.

CASE XII.—*Carcinoma of Uterus.* Mrs. N., aged 47. Previous history good. Believes her mother died from cancer of the breast. About three years ago this patient passed through the "climacteris period" and had no symptoms until 10 months ago when repeated hemorrhages accompanied by deep uterine pain occurred. This was considered a final windup of the menstrual life and no attention was therefore paid to the condition. Patient grew rapidly weaker and hemorrhages were followed by a profuse discharge of pieces of tissue having a very foul odor. On consulting her physician the diagnosis of carcinoma of the body of the uterus with metastasis was made. The condition of the patient was such that surgical operation was contraindicated. The patient was informed of the seriousness of her trouble and also that X-ray treatment might be tried, not as a curative measure, but to relieve the hmorrhages and pain, and to make her somewhat comfortable while she awaited the end. After six X-ray treatments the hemorrhages ceased and much of her pain had disappeared. Treatments were continued daily for forty-five days, during which time the patient was almost free from disagreeable symptoms. General carcinosis having set in long ago, of course the end was only a matter of time and she finally died.

This case illustrates very clearly how little care or attention women give to themselves. No doubt if this case had been placed under surgical treatment early enough and the operation followed by X-ray treatment the outcome would have been very different. It teaches also that conditions which cause repeated hemorrhages need early attention, since they are largely indicative of malignancy in the uterine cavity We believe there is no excuse for procrastination in dealing with conditions that may sooner or later destroy the life of the individual affected.

In conclusion I wish to say that we are aware of the fact that many criticisms have been expressed by those who have not had personal experience with electric methods and whose criticisms for this reason have been largely unjust. It should be remembered that electricity is only one of many remedies in alleviating human ailments and when it is correctly used in properly selected cases it is of considerable value.

DISCUSSION.

Dr. Neiswanger rose to a question of privilege and stated that he had not seen the last issue of the "American Electro-Therapeutic and X-Ray Era" until a few minutes ago, when several members of the society had called his attention to the criticisms of the editor of that journal upon the paper he had read at a previous meeting. He was surprised to note that these criticisms appeared *in the body of the article.*

In justice to the editor he thought this may have occurred through ignorance of customary usage and not a desire (as some had stated) to belittle the writer of the paper. Dr. Grubbe had read an excellent paper to-night upon a kindred subject and had voiced the very sentiments of the paper referred to, which the editor had seen fit to criticise in such an unseemly manner. He sincerely hoped, for the good of the society, that if the editor of the "Era" had comments to make on Dr. Grubbe's paper, they would be placed where editorial comments belong.

Dr. Grubbe's paper is a valuable contribution, as it gives results of careful scientific work. For a long time the negative pole was used in the treatment of uterine fibroids, in fact Apostolli used this pole, but it was necessary to employ currents of large amperage which produced considerable sloughing of the tissues. Now the positive pole is used in the treatment of these tumors. For some years past he had used the positive pole in these cases. He is not sure but that this form of treatment was original with him. He was led to use it because the positive pole is a powerful vaso-constructor.

These tumors are richly supplied with blood vessels and lymphatics. The positive pole cuts off their nourishment and they behave just as all benign tumors when their supply is

interfered with—they retrograde. In several cases of membraneous dysmenorrhea (and such cases were especially worthy of mention as they had been called incurable) he had found them very tractable to treatment under the negative pole, as the essayist had outlined.

The lamp exhibited by Mr. Anton Frank had hollow electrodes of iron which were kept cool by a stream of water circulating through them. The light generated was of a dazzling brilliancy, but was especially rich in the violet and ultra violet rays as had been determined by a spectroscope. The lamp did not become heated, although 10 amperes were passing through it. It could be used in connection with a ray with the X-ray treatment upon superficial dermatosis.

A CASE OF HIP-JOINT DISEASE.

BY H. S. KELLER, M. D., PRESIDENT OF BOARD OF U. S. EXAMINING SURGEONS, FRANKFORT, KY.

Considering the improved general and local condition in this case, and the fact that the environment and habits of the patient were always the same, a definite and permanent improvement can be claimed as the result of the Roentgen rays.

The child, a girl aged six years, has been under my care since birth; born of parents past forty, with eleven years intervening since previous child.

There was a marked and persistent anemia, club-nails; teeth are soft and decay as soon as they appear; profuse perspiration about the head and neck, often becoming general.

About four years ago, began to suffer with shifting pains, more particularly in fingers and toes, which would at times

become red and swollen. Had an irregular temperature, often as high as 103 degrees. About fifteen months ago, pain appeared and persisted in right knee, soon followed by night cries; later by obliteration of one of the gluteal folds and flattening. Fixation of the joint was soon rejected on account of the complaints of child, and the parents determined to try other measures. An abscess soon developed and opened about juncture of upper and middle third of thigh. This continued to discharge pus for five months, when I began the exposures to the Roentgen Rays, July 1st, 1902.

She received an exposure at ten inches over joint and course of sinus from a medium low tube of from seven to ten minutes, every other day. The tissues exposed became *a very dark* brown and have remained so. The discharge became markedly less after three exposures, but continued for two weeks to discharge a small quantity the next morning after the exposure.

She has had irregular treatment since September, 1902. There has never been any reaction except the pigmentation.

During the whole period of the treatemnt, the family, yielding to the child's demands, have allowed her to ride a tricycle, using the good leg for propulsion, walk with and without crutches and numerous other things detrimental to her recovery.

The result here is a comparatively sound joint, with only one-half inch of shortening; the foot which was everted to nearly a right angle is carried normal.

The improvement in nutrition as evidenced by weight, color, growth and condition of hair, is as well marked.

Editorial.

The paper by Dr. J. Mount Bleyer is interesting and his views regarding the etiology of X-ray burns are original. No one can take exception to his report of the investigation by pathologists in the etiology of heat-burns. We must, however, dissent from his views as to the causation of the X-ray burn. We are not prepared to state that dust particles or germs floating in the air cannot be repelled from the surface of an X-ray tube, because the walls of this tube are electro-statically charged, and light objects can be repelled from a charged body; but it does not seem reasonable to hold that a radiation could produce such a motion. All scientists are agreed that the X-ray is a radiation of some kind, that is, a kind of wave motion.

But we object to this conclusion not only from the theoretic standpoint, but also on the experimental standpoint.

There can be no question that without the use of any antiseptic agent or dressing such as is recommended by Dr. Bleyer, a very considerable number of ulcerated epitheliomas, eczemas, lupus, acne, and all forms of inflammatory conditions have been healed, showing that the X-ray has acted as an antiseptic agent, destroying the pus cocci which were undoubtedly present as well as inhibiting their growth, instead of aggravating the infection by driving the bacteria into the lymph stream.

The paper, however, is one that should be carefully read. The success of the method in Dr. Bleyer's hands is very gratifying.

MINUTES OF THE REGULAR MEETING OF THE CHICAGO ELECTRO-MEDICAL SOCIETY.

Dr. Burdick in the chair.

Minutes of the February meeting read and approved.

Report of Dr. Burdick concerning the status of the legal proceedings regarding the right of the other society to use our name.

The case was heard on the affidavits presented by both sides. It had been agreed by both sides that the decision of the judge should be final. The judge decided that the incorporated society had the right to the name. The decision was accepted in bad grace by Dr. Pratt's Electro-Medical Society, and he has threatened to appeal to some other judge or appeal to the Appellate Court. In the meantime we can only await developments.

Paper read by Dr. R. H. Street, entitled "The X-Ray; Its Use and Abuse." Paper was discussed by Drs. Coleman, Neiswanger, Boomer, Burdick and Dr. J. A. Weitz, of Montpelier, Ohio.

Paper by Dr. E. H. Grubbe on "Electricity in Gynecology." Paper discussed by Drs. Neiswanger and Burdick.

A new therapeutic lamp was then exhibited by Mr. Anton Frank. Dr. Burdick states that he was giving the lamp a trial on some of his cases.

Society then adjourned.

March 31, 1903.

C. H. TREADWELL,
Secretary.

NOTICE OF THE NEXT MEETING OF THE CHICAGO ELECTRO-MEDICAL SOCIETY.

The next meeting of the Chicago Electro-Medical Society will take place April 28, 1903, at 301 Schiller Bldg., 8 P. M.

Dr. G. G. Burdick will read a paper entitled: "Electrolysis in the Treatment of Stricture of Male Urethra."

THE X-RAY—ITS USE AND ABUSE. *

RICHARD H. STREET, M. D., CHICAGO.

Believing in the great value of the X-ray as a diagnostic and therapeutic agent, I feel that I may be permitted to express my views upon this subject which has been so much used, abused and discussed, not only by the medical fraternity, but by the public at large through the medium of the daily press.

Its use as a diagnostic agent I will not take up this evening, as all are more or less familiar with the great work that has been done in that respect.

The therapeutic facts have been brought to your notice by such writers, teachers and workers as Pusey, Burdick and Grubbe, of our city, and many others. I will take only the time to sum them up as they appear to me.

1. The X-ray is the most remarkable diagnostic and therapeutic agent of the age.

2. Its greatest value is in the treatment of superficial diseases, such as lupus and epithelioma of the surface, and in all post-operative cases of cancer and tubercular conditions to prevent recurrence.

3. It is of great value in all inoperable cases of cancerous growths to relieve pain and prolong life, making the last days of the condemned one comparatively comfortable.

Many symptomatic cures have been affected in this last named class of cases.

5. Hemorrhages and discharges are markedly lessened under the application of the X-ray, and in many cases cease entirely.

6. This form of treatment has been found invaluable in many cases of skin disease.

One very important fact, which seems to be overlooked by the majority of the medical profession, as well as the laity, is that it takes more than a medical diploma and an X-ray apparatus to make an expert radio-therapeutist.

In discussing the abuses and blunders, we must go back about two years and look over the literature upon this subject.

*Paper read before the Chicago Electro-Medical Society, March 31st, 1903.

It was difficult to find a medical journal, or, in fact, newspaper, that had nothing to say upon the subject of the therapeutic use of the X-ray; some to praise, but many to condemn. An over-enthusiastic few saw in this wonderful discovery the long-looked for "fountain of youth"—panacea for all ills. Their writings made the reader wonder what was to become of the surgeon and family physician. This, of course, had a tendency to make the skeptical more bitter in their criticism.

The daily papers were filled with wonderful cures and new discoveries. It seemed that there was nothing that would not yield to this all-powerful light.

One physician went so far as to state, in a daily paper, that he could remove or restore the hair at will. I quote an excerpt from the article, as follows:

"The day when bald heads will no longer monopolize the front row at the theater, when shining pates will no longer take up half the funny pictures, and when all hair-growing nostrums will beg for buyers, is near at hand, for the X-ray has been found to be a cure for baldness."

To my mind all this early outburst of enthusiasm upon a subject not old enough to leave the nursery, was undignified and should have been discouraged by those who were hard at work in their laboratories making scientific investigations and experiments.

Nevertheless, it led many of the general practitioners to purchase X-ray apparatus. The X-ray and electro-therapeutic laboratories of this city received daily visits from physicians who wished to learn the use of the X-ray, and who were willing to give an hour or two to the study of the mysteries that lurked in the coil and tube. A few words from the radio-therapeutist, who had given years to the study, as to what kind of a current to use, how to connect the tube, and which switch to turn first, seemed to be sufficient. He was thanked for his instructions, and with this thanks was born a new radio-therapeutist fully equipped for the battle. The above may sound fictional, but I feel sure that many other workers have had similar experiences.

Is it any wonder that these illy-equipped experts (?) should make mistakes and by their mistakes bring the X-ray, not

themselves, into disrepute. I am at a loss to understand why, in this enlightened day and age, the mistakes and blunders of inexperienced workers should reflect discredit upon a scientific subject. But the fact remains that all burns and deaths which have been attributed to X-ray exposures are blamed upon the Ray, and not upon the man behind the tube. This does not apply to other branches of medical science. Surgery and medicine are not held accountable for the blunders due to ignorance or inexperience of the surgeon and physician.

We realize more and more every day that the medical profession at large should be educated along this line; but the question arises how is this education to be accomplished when a large majority of the X-ray workers know so little about the subject, and have spent so short a time in acquiring that little.

The following I consider a very good illustrative point. Very recently, an address, illustrated by photographs, was given in one of our leading medical societies upon a wonderful new discovery in X-ray photography. In passing, I wish to state that the subject had been "weighed in the balance and found wanting" in practicability. The speaker went on to state that he could say very little regarding technic, as his knowledge of the X-ray had been acquired in five weeks. Previous to that time he had never seen an X-ray apparatus in operation. He remarked that he had read *all* the literature upon the subject of X-ray photography and could find no mention of his process ever having been used.

I think you will agree with me that this one illustration shows us the need of educating the profession in the value of the X-ray in surgery and medicine. Those operators who have failed to make a proper and complete study of the X-ray constantly run the risk of appearing in the role of defendants in the courts, as the following case reported from a neighboring city illustrates:

"He (the plaintiff) claims that in March of last year, he swallowed, or inhaled, a small piece of gold, which lodged in his trachea, and that he visited the defendants for treatment. He says that five times in succession, at varying intervals, the doctors subjected his exposed back to what is known as the X-rays. He then alleges they informed him that they

were not experts in the use of the X-ray machine. Thereupon he visited an expert, who exposed him for the sixth time to the exposure from the X-ray. Plaintiff claims that he suffered through the use of the X-rays by the defendants, severe shocks, and received injuries externally and internally. The skin sloughed from his back, and there was considerable destruction of nerves and tissues."

How much better would it have been had our colleagues admitted their ignorance of the subject before they demonstrated it.

I think a few more cases of this sort will teach the medical profession that this branh of medicine belongs to the specialist who has made it the subject of much work and study.

I fear that commercialism has done much to retard the scientific growth of the X-ray. The clever salesman spares no trouble in illustrating and explaining the workings of his apparatus, and he can convince the would-be purchaser with its simplicity of operation and of the great returns sure to accrue from the capital invested. One ingenious firm went so far as to offer with each apparatus sold, as a preimum, a free course in a school of electro-therapeutics. The value of such a course is most appreciated by those who are on the lookout for something for nothing—thus valueless.

The most shameful abuse of all is practiced by the "quack" advertising doctor (?). The newspapers are full of invitations to suffering humanity to avail themselves of "famous free X-ray examinations." These unscrupulous money-makers promise the most absurd results, claiming to be able to diagnose any and all troubles to which the human flesh is heir by their wonderful "new" methods. The ignorant populace flock to their well-equipped offices. The X-ray examination is free, and is worth just what it costs; but they pay dearly for "bi-chemic" treatments, electric belts, etc.

This evil should be stamped out, and it must be done by the medical profession. For they, as well as the ignorant public, are the sufferers.

This can only be accomplished by the honest X-ray specialist, who should educate the general practitioner in the value and use of the X-ray, and he in his turn should impress

those of the laity with whom he comes in contact with the position that the X-ray occupies in the science of medicine.

126 State street.

DISCUSSION.

Dr. Coleman said, that while all the paper stated was true, he wished the doctor had given more attention to educating the general worker in the correct use of the X-ray. A special field of investigation in which he had been working was the treatment of lesions involving the eye and the surrounding structures. He began the treatment of these cases with great trepidation, because he did not know the tolerance of the eye to the X-ray. One of his cases had been diagnosed as an epithelioma of the lid. He told the patient that he did not know whether the X-ray would destroy the eye, but advised her to take the risk because the lesion would undoubtedly proceed to fatal termination. He therefore referred her for treatment to Dr. Neiswanger, who treated her two or three times a week for a considerable length of time. He was surprised to note that the vision of the patient did not deteriorate. He thought that she had received possibly one hundred treatments, when he finally noticed an ulcer on the cornea, and thought that this was an extension of the lesion. He has, however, since questioned that, because the skin surrounding the eye received quite a severe dermatitis, and now thinks that the ulcer might have been due to the radiation.

He is also trying the X-ray in a series of cases of trachoma. Only one of the cases has he completed: After eighteen or twenty exposures the lids were perfectly smooth.

Dr. Coleman called attention to a lack of observation, which he believed was almost inevitable among those beginning the use of the X-ray, namely, overlooking the first signs of dermatitis. In the first case he treated, the patient was the first to notice the redness of the lids. Afterwards the ulcers developed on the cornea and lid. The case has now recovered. He felt this experience was worthy of mention, because he had not been able to find any literature on the direct exposure of the eye to the X-ray. In fact, a case of optic atrophy, which had been referred to Dr. Pusey for treatment, was radiated through the temple and not direct.

Dr. Neiswanger said that the patient referred to him by Dr. Coleman had not really received more than fifty or sixty treatments and the vision had improved a little under the treatments, a fact which Dr. Coleman had mentioned early in the treatment. The eye withstood the ray better than the surrounding tissues. The part of the lesion affecting the skin had reacted favorably to the ray and, in fact, seemed entirely healed, but afterwards it extended to the deeper tissues of the orbit. This brought to mind a remark which he had often made to his classes that an epithelioma of the mucous surface was harder to cure than one involving only the skin. The lesion is now rapidly healing up. The depth of the ulcer lessened. There has been some disintegration of the surrounding tissues and he believes that the malignancy of the growth has been destroyed, the ulcer simply being due to the dermatitis. An epithelioma involving a corner of the mouth healed readily in about one month after about twenty applications. Only a white scar remained, and the patient went home. Subsequently, however, the submaxillary gland on the same side began to enlarge and the patient reported for treatment. The lesion is carcinoma of great malignity, as evinced by the rapid invasion of new tissues and the extremely fetid discharge.

Dr. Neiswanger believes that not enough surface was radiated in the first course of treatment, and that much of the surrounding tissues should have been included in the area of treatment; it would then have been impossible for the lymph channels to have carried the infection through the glands.

Another peculiar thing with respect to this case he wanted to mention. He constructed a mask by cementing tin foil upon a false face, using two or more coats of the foil. The cement substance was white lead, which adheres very well; moreover, this is opaque to the ray, as evinced by the black shadow which it will leave on the fluoroscope. This mask projected in front of the face something like a sunbonnet. Vigorous treatments were instituted upon the submaxillary region, producing a considerable dermatitis, but an unexpected

feature was, that the burn spread over the entire side of the face, the upper lid of the eye developing a cellulitis.

A case of tubercular glands of the neck presented similar phenomena. The lead foil was of four layers in thickness and was lapped over both sides of the head like a sunbonnet. In spite of this precaution, the entire front of the face was reddened. From these facts it looked as though the X-ray had gone around the corner. He would like some one, who had had similar experiences, to explain the phenomena.

Dr. Coleman rose to add: In the trachoma case described as cured, an ulcer of the cornea occurred near the close of the treatment. It is a question whether this was due to the radiations or was it due to the trachoma, a frequent result.

He had treated a girl of 16, suffering with opaque cornea for about two years. The vision had stood still 6 months. After 15 to 20 treatments the vision had doubled. He did not protect the surrounding tissues and about an inch of her pompadour and here eyebrows were depilated. He was much relieved, however, to find that they subsequently returned.

Dr. Burdick said he had noticed, in quite a number of his early cases, the burning along the edge of the mask and he had laid this to the small electric sparks discharged upon the skin from the lead foil used as a protection, and which becomes charged electro-statically. It may be overcome by placing the mask in contact with the skin.

Dr. Neiswanger replied that the dermatitis produced by fine static sparks looked very different from this. The skin got brown and peeled off in places, typical of an X-ray dermatitis. The entire nose and front of the face was affected.

Dr. J. A. Weitz, Montpelier, Ohio, rose to ask concerning the metastases in the submaxillary glands. He questioned whether the infection would not be carried more rapidly after an epithelioma softens up under severe treatment, than if a milder form of treatment were given.

Dr. Burdick said that the extension of the lesion to neighboring glands ought not to occur after the case is progressing towards recovery. He believed that such cases were due to limiting the area of treatment. It was his practice to radiate almost the entire body, except when he wished to produce

a breaking down over a small area. In such cases he would give a series of four or five exposures, crowding a large current through the primary of the coil and therefore getting an intense ray. The surrounding tissues are protected by a shield placed in direct contact with the body. By this he would not obtain any induction effects, and the rays could not penetrate under the shield. The fluoroscope is not a correct criterion to determine the kind of ray you wish. Photo-chemical rays and the X-ray, used radio-therapeutically, are the same thing. The illumination of the screen depends upon the speed with which the corpuscles travel within the tube, and the speed of the corpuscles depends upon the electro-motive force of the apparatus alone. More amperage may be sent through the tube at a given electro-motive force without increasing the illumination, but it does increase the richness of the photo-chemical light and just in proportion as the amperage is increased at a given electro-motive force, just in the same ratio do we get greater reduction power from the X-ray.

If you take a low tube with a resistance less than a quarter inch in the air, one which does not give any X-ray when in series, you can verify the above statement. The penetrative power of the ray depends upon the electro-motive force of the coil. The speed of the corpuscles in the cathode ray depends upon this electro-motive force. The number of corpuscles in the discharge depends upon the magnitude of the current going through the tube.

The static machine sends out ether waves into the space surrounding it and these waves degenerate in the heat. The coil does not send out these waves in the same proportion for the electro-static tension is not so high.

A very curious fact he had noticed respecting the indirect effects of the X-ray upon the eye. Up to about a year ago Dr. Marsh had to wear glasses for myopia. He then began to experiment with the X-ray. His eyebrows came off and have not completely returned, but he now can dispense with his spectacles.

Dr. Burdick protects simply the eyebrows, because he has found that the eye withstands the X-ray. The early sign of X-ray burns is the smarting and stinging sensation followed

by an intolerable itching. This is a sign for you to let up on the treatment, unless a pronounced dermatitis is desired. Since the paper deals with the uses and abuses of the ray, it does not require any elaborate discussion. We are all familiar with its abuses.

The X-ray is on trial before the medical profession only. Among X-ray therapeutists it is no longer on trial, because every expert knows pretty well its limitation. He could sign a contract of "No cure, no pay," and would not lose a case where such a contract was made. He could say, that the ray bids fair to cause a marked improvement in other cases where a cure could not be expected. The use of the X-ray in all the difficult work must be confined to experts, men who give all their time and thought to the work, and do not make it a secondary part of their business. While the general practitioner is out on a confinement case, patients are waiting, and the results cannot be most favorable.

Among the abuses of the X-ray may be mentioned a case which illustrated the half-hearted way some men carry on X-ray treatment.

A prominent surgeon, who uses a static machine, treated a cancer for four months, charging five dollars a treatment. Now most of the experts do not use static machines in the treatment of cancer. The case did not improve and the surgeon assured the patient that all hope was lost. One of Dr. Burdick's friends persuaded the patient to come to him for treatment. In twenty-eight days the cancer was entirely healed, and there is no evidence of a malignant growth. In some of the tissue taken for microscopic examination, there were no epitheloid cells, but it was normal tissue with a predominance of connected tissue, such as is found in all cases treated by the X-ray. Of course, we cannot be sure that there may not be a recurrence, but in that case, the treatment could be instituted at the first sign of a recurrence. One singular fact in connection with this case was the attitude of the surgeon alluded to. Whenever meeting the patient on the street he would inform the man that he would regret taking the treatment and did all he could to discourage him.

Another case, cancer of the breast, was informed by one of

the surgeons that the breast could not be successfully treated by the X-ray; but after three months' treatment the woman was cured. The surgeon seemed to be angry because of a success of the treatment.

Every operator has learned valuable points from his failures. We can do in weeks now what formerly required months to accomplish in our early experience. For instance, we did not use any adjuvants for the X-ray treatment, but we now use all possible assistants to sustain the vitality of the patient and to aid in elimination of waste products.

Dr. Street, in closing, said that he wished to agree with Dr. Burdick regarding the adverse position taken by the surgeon in regard to the therapeutic use of the X-ray. About two years ago two of Chicago's most prominent surgeons were interviewed upon the subject and both condemned it in the most severe terms, calling it the work of quacks. To-day these same surgeons are using the X-ray in their practice and praising it in glowing terms as "The greatest therapeutic agent of the day," simply showing that ignorance of the subject made them blind and that stubbornness prevented their acquiring knowledge.

ORIGINAL RESEARCH ON PARAFFINE AND ANTISEPTIC DRESSINGS AS A SPECIFIC AGENT AGAINST THE SO-CALLED "X-RAY" BURNS, AND MY THEORY OF THEIR CAUSES; WITH A REPORT ON TWENTY CASES OF LARYNGEAL TUBERCULOSIS TREATED BY THE X-RAYS, AND WITH TWO CASES OF EPITHELIOMA OF LIPS AND TONGUE—GENERAL REMARKS.*

BY C. J. MOUNT BLEYER, M. D., F.R.A.M.S., LL.D., OF NEW YORK.

Discoveries of the properties of the X-rays go on apace, and the scientific world is watching with the closest interest,

*For the XIV. International Congress on Medicine. Madrid, April 23-30, 1903.

the different aspects of the experiments being made, to determine the effects of these rays upon human body.

Since the discovery and application of the X-rays in medico-surgical work, reports have spread among the profession and lay-public, that a grave danger accompanies their use, owing to the fact that they produce the so-called virulent burns by exposure to them.

Records now on file show many cases differing in degree; and some that have proved fatal and some proved most damaging to parts from a lingering exposure to them. Even, there is recorded a recent murder trial in this state, where the question arose whether or not the physician who made this X-ray exposure upon the patient had not committed an act of negligence which resulted in death. Let me say at the beginning of my remarks, and this I gather from experimental work, that in their future application all timidity can be allayed. I conclude, that if certain precautions are taken when applying these rays, and the proper apparatus used, no burning is possible. I speak now from experience in the daily employment of the rays to the chest-wall for diagnostic purposes and as an aid in discovering early signs of tubercular and other allied diseases, and also the employment of these rays as a therapeutic agent whose merits are already known.

This investigation gives me the right to an opinion, and I lay it before you to show how we all have fallen into that false position of calling these phenomena burns produced by these X-rays, when it is nothing more or less than secondary inoculation.

Now that we know how to remedy the dangers connected with their use and how best to avoid a recurrence of the same, the physician or whosoever applies the rays is to take the blame, if the proper precautions, as in all surgical operations, be not observed. Later, I shall refer to all these facts.

Let me eliminate from your minds that an X-ray application, or the use in its radiography or in their therapeutic use is a dangerous procedure, either on a long or short exposure. If this force is applied and handled by skillful hands and suitable mechanism, there is absolutely no fear of producing this phenomena of inoculation, known fallaciously as X-ray burns.

This inoculation, according to my observation of a series of experiments, is due to several physical effects produced by the generation of these rays and the general conditions present. It is a recognized fact that the use of the Ruhmkorff coil in connection with the generation of these rays is an apparatus which gives an exceedingly high electro-motive force and amperage; and therefore, when such high discharges are exhibited, they produce certain physical conditions in the atmosphere surrounding the patient or person exposed to these rays.

discharge is leveled against the subject, carrying with it from

To sum up these physical facts, we find that this high the surrounding septic atmosphere, certain particles floating therein. Also the clothing and skin of the patient are surcharged at all times with bacteria and foreign material, which are at all times present, sometimes setting up an infection; at other times an inflammatory condition is produced by this septic matter being force-driven under the layer of the skin that is exposed to this phenomena. By the use of the static machine these conditions happen also, but in a more modified way; nevertheless, this secondary infection also takes place where the X-rays are applied, no matter how generated.

This inflammatory or inoculated condition, which I have discovered in my crucial experiments to be the results of all these facts, can now be avoided without any difficulty on the part of the operator by the adoption of a few rules gleaned from my experiments which I shall give in the summing up of my remarks.

I now bring before your notice a few important facts, which are also corroborative and apply directly to my own investigation. These facts cannot but be appreciated at this moment as they come also from several later observers who have studied the question of burns due to fire and hot water and the causes of death therefrom. We already know that many deaths are due to burns produced by other causes than the X-rays. To account for deaths which occurred among persons suffering from other burns, even where the injuries received seemed to produce the fatal results, has been a puzzle for the scientist.

Persons who have escaped with their lives from a fire,

whether very severely burned or otherwise, suffer peculiar pain, which is followed by a peculiar torpor and dizziness, and not infrequently, by delirium and convulsions. The pulse becomes weak, the breathing irregular, the temperature lower, and there almost always follows vomiting and other symptoms of poisoning terminating within twenty-four to twenty-eight hours in death.

Although these symptoms have received the attention of a number of scientists, their views of the actual cause of death are widely diverse. The first guesses, though ingenious, were very far from the truth. A German, F. Falk, arrived at the conclusion that persons suffering from burns died of colds caused by the abnormal amount of heat given off through the burned portions.

Prof. Poufete on the other hand, believed the cause to be the destruction by heat of a great number of blood corpuscles, thereby inducing a disturbance of the circulation. Addakoff, a Russian physician, stated on his view, gained from clinical observation, that the result of burns upon the system bore a resemblance to the effect produced by certain poisons, particularly those generated in the body by the failure to draw off secretions. Lustgarten and Kijarictson came still nearer to the truth. The former compared the results of a burning with that of ptomaine poisoning and the latter declared that under some influence or other, probably that of a ferment, or of bacteria, a poisonous matter developed in the blood of burnt persons. He actually found in the blood of such persons a poison (ptomaine) that is not present in normal bodies. It is a formless matter with a sharp, disagreeable odor; if injected into dogs or rabbits it produces all the symptoms caused by burning. The belief of Lusgarten that bacteria causing injuries which settled in the wounds were the generators of the poison was shown by the experiments of Agello and Parascandolo to be unfounded. Both these men were able to take from any part of the body of a burnt animal a poison the injection of ten grams of which into a dog weighing twenty pounds produced instant death. The strongest poison was obtained from the burnt flesh, a lesser was in burnt entrails and the weakest of all came from the blood. From this may be deducted with certainty that the ptomaine

is not solely in the blood, but in the whole of the burnt portions and is thence carried into the system. Burned persons poison themselves, so to speak. The poison may be regarded as the product under the influence of high temperature of the albumen and the direct impregnation of bacterial poisons from without. It has been found possible, however, to prevent the poison from spreading by removing the burned portion before the ptomaine had entered the circulation. It is known from the experiments of Agello and Parascandolo with animals that all recovered, without having suffered from the symptoms incidental to burns when the amputation of the burned parts occurred immediately after the burns were received. Where the amputation was delayed for twenty-four hours, they all succumbed, except in instances where large quantities of blood were removed by bleeding, the blood drawn off being replaced, however, by a transfusion of the blood. By the bleeding, a large quantity of the poison was removed. The blood artificially supplied so strengthened the animal that the further separation of the poison from the blood by means of the kidneys was facilitated.

I lay much stress upon this important point due to the X-Ray phenomena; that the X-Ray burn always appears many days after the application of this force or light to any part of the body and does not give an early manifestation in minutes or hours thereafter, but days elapse. Even after eighteen days these X-Ray burns may show themselves. They begin slowly with a painful dermatitis and symptoms resembling burns from heat and scales.

It is therefore from the very outset that the difference of the clinical conditions is apparent. How should we avoid this dangerous condition in the application of the X-Rays?

To sum up the whole matter in a few words, let me add the following, viz.: all parts to be radiographed, treated or examined, or whenever these rays are to be employed should have all clothing removed therefrom and should be washed with an antiseptic solution and so prepared as though a surgical operation were to be performed. Also there should be a room prepared which is as free from infectious material as possible, or there should be one especially appointed for the purpose.

These are the first cardinal rules which must not be deviated from in order to avoid a dangerous inoculation of poisoning.

REMARKS ON PARAFFIN DRESSINGS FOR THE PREVENTION OF SO-CALLED BURNS.

Let us take into serious consideration this fact, that it is risky to use any screen, no matter of what class of material it is composed, that is not in direct contact with the part to be treated, radiographed or inspected by the rays. Screens, therefore, must be fitted to the closest possible position, leaving no interspace between the subject and the screen unless the protective paraffin, gauze or paper dressing envelops the entire surrounding parts.

I have found from experience that any interspace left unprotected between the patient and the screen exposes the patient to the secondary infection, which is produced by particles either on the part itself to be X-Rayed or floating in the air, etc. To prevent such a disaster at the very outset of the use of the X-Rays in all conditions, I plead for the strictest aseptic surroundings as well as perfect aseptic conditions of the subject. These precautions are more important in connection with operating the X-Rays. I find them even more important here and more risk is attached to the neglect of them than in the performance of a surgical operation without the antiseptic condition. No one can appreciate this position unless he has given some attention and study to the physical power of the X-Rays as a carrying medium for foreign material floating in the surrounding air, for particles attached to clothing and upon the surface of the skin or elsewhere are always present, where the X-Rays are to be applied.

The dressings used before the X-Rays are applied should be of such material as is absolutely impermeable to all dust particles, etc. I find that the ordinary surgical gauze, either soaked in paraffin or the ordinary wax solution, or the surgical gauze plain applied in several thicknesses of say one-half inch and then covered over with about thirty thicknesses of sheet wax paper or paraffin paper will be found a first class protector against these particles, thus making the X-Ray a filtered ray. But before all the procedures we must not forget under any consideration that the aseptic preparation of the

subject to be X-Rayed should receive detailed attention, otherwise the patient is exposed to the risk of the secondary inoculation, as I call the burns. Never under any consideration can the same dressings be used upon a patient the second time, or the used dressings upon any other subject, as they already contain contaminated material from the first exposure, which was forced through and is upon them, especially when treating parts in an ulcerative or diseased condition. These rules must be rigidly observed where this state exists; fresh dressing must be applied at each sitting. My method in such instances where ulcerative, etc., conditions are present is as follows: Aseptic washing of the part; covering at once with antiseptic gauze and paraffin covering before any exposure to the rays is made, this followed by a fresh dressing according to one's own experience in practice. I generally use sterilized pure glycerin or albaline with some antiseptic in solution as a secondary dressing where I find the skin irritable.

HOW SHOULD THE OPERATOR PROTECT HIMSELF FROM THE INJURIOUS EFFECTS OF THE X-RAYS?

Prevention is the first rule to be observed. Prepare your hands, face and head as you would in any operating room. The cardinal rule to be observed is that the head, hair, face and hands be thoroughly shampooed, and when ready for making the exposure the head should be covered by a protecting hood of linen, freshly lined, each time it is used, with gauze and paraffin paper or similar material. The face, which much be clean-shaven, after a thorough brushing with soap, receives a coating of vaselin, glycerin or like substances. This rule is also to be followed for patients placed under the rays when they are used in these regions. The hands need the most scrupulous care, the nails cut short and the brush used to cleanse them as clean as possible, as these are a great source of this secondary infection. Cover the hands and arms entirely with a solution of antiseptic glycerin or vaselin.

If these hints are followed you will find that no so-called X-Ray burns will occur, and this much-feared accident will cease to be a troublesome obstacle to the more general use of X-Ray therapeutics and Radiographing.

I must caution you that using any class of screen without the

superimposed dressings close to the patient is taking the greatest risk of secondary infection. As a double precaution additional metallic or composition screens may be used, but the formidable dressings are the first essential to the safe application of the X-Rays.

To show the success of this mode of prevention of X-Ray inoculation, I append my record of twenty cases of laryngeal tuberculosis which were treated by the X-Rays, in which my protective dressings were used throughout the treatment, besides the hundreds of other exposures without a single accident.

I cannot report one case where any injurious effects resulted during the entire treatment and attribute the same solely to this manner of prevention and the truth vested in my theory of the X-Ray burn being a secondary inoculation.

"Report of twenty cases of Laryngeal Tuberculosis and two cases of Epithelioma of Lips and Tongue, Treated by the X-Rays and with General Treatment from the Laryngologist Point of View."

We all know of the efficiency and virtues ascribed to the X-Rays since their discovery. It would be more than useless for me to recapitulate their phenomena and value. Let me simply make a report to you of the twenty cases which were treated by me, under these rays, and what the results were. There was no simpler remedy ever found for the treatment of this serious affliction than these same mysterious rays.

I began my work early in 1896 and up to date I am able to make this report:

The X-Ray in combination with general treatment, that is, currettage, application of lactic acid and the daily intratracheal injection of the ordinary albaline preparations, with fresh air, food and sunlight, will be found to compose the full armament for the successful treatment of these diseases. The X-Ray, as I find it, has simply a specific action upon the tubercular infiltration and its surrounding tissue, while the other remedies simply aid in the progress and rehabilitation of these tissues to a more normal state.

Of all these cases I have to report but two failures and

those, very advanced, were only taken on as a mere experiment. These two cases had already progressed to a stage where the surgeon's hands and skill were useless; also the complications that were present were of such a character that no treatment at our disposal would have been of any service in saving the life of the patient.

The other cases all made rapid recoveries in from seven to ten weeks' time.

The time occupied for each sitting is from 15 to 30 minutes; the rays are applied by means of a shield made of lead, fitted over the external part of the throat. An opening is cut in the lead shield, sufficiently large to allow the rays to pass directly over the seat of the disease. All the previously quoted precautions against burning must be strictly adhered to. Simple antiseptic dressings over the applied X-Ray area should always be kept on until the end of the treatment.

It is unnecessary to repeat the clinical history of each case or to tell you what has already been attempted and done in the various number of installed remedies for laryngeal tuberculosis or to go into the pathology of it. But I place plainly before your notice this fact, that in the X-Ray we have found a remedy which has proved itself a staunch friend.

Throughout the entire care of such cases we must not neglect the least hygienic principle. Feeding, one of the most important factors, must be carried out to the minutest details.

A nurse should be employed in every case and the orders left by the physician must not be deviated from one iota.

Regular and carefully selected food is a sheet anchor to success. The nurse must feed the patient every two hours, and if necessary the feeding tube must be resorted to.

TWO CASES OF LIGHTNING STROKE.

The following report appeared in the Wisconsin Medical Recorder, contributed by M. C. Martin, M. D., of Hartwell, Neb.:

"Two men, several rods apart, were struck simultaneously at Paxton, Neb., several years ago. Fred Crook, section foreman, was struck on the head, making a star-shaped tear in his hat, singed the hair on back of head; about five minutes afterward found him unconscious and apparently lifeless on floor of hotel. I commenced artificial respiration, put some glonoin in his mouth, also gave him nuclein occasionally. His feet were placed in hot water and his legs rubbed by friends and neighbors. His breathing was not regularly established for about three hours. He did much groaning as he was coming to. He was taken up stairs in the hotel and kept several days, being watched carefully. Lager beer was the first thing he wanted and I let him have it. His pulse ran down to 50. He was kept on tonics till he recovered. He remembered nothing that occurred at the hotel. He went to work in about three weeks.

"The other case was a man going through Paxton. The electricity cut his collar and necktie off on the left side of neck, burned hairs off down his body, broke a truss off on left side, burned hairs off clear to left foot and left a sore place under his foot where it parted company with his body. While I was working on case No. 1 the other case was taken up stairs and watched. They said his pulse ran up to 140 per minute. He was badly scared and complained of pain as much on the right side as on the left side. He was found to have a pulse of 120; it staid at 120 for two or three days. He was given heart tonics for a few days; then he was sent back to Iowa.

"It is safe to say that neither of these men will ever voluntarily act as lightning arresters again."

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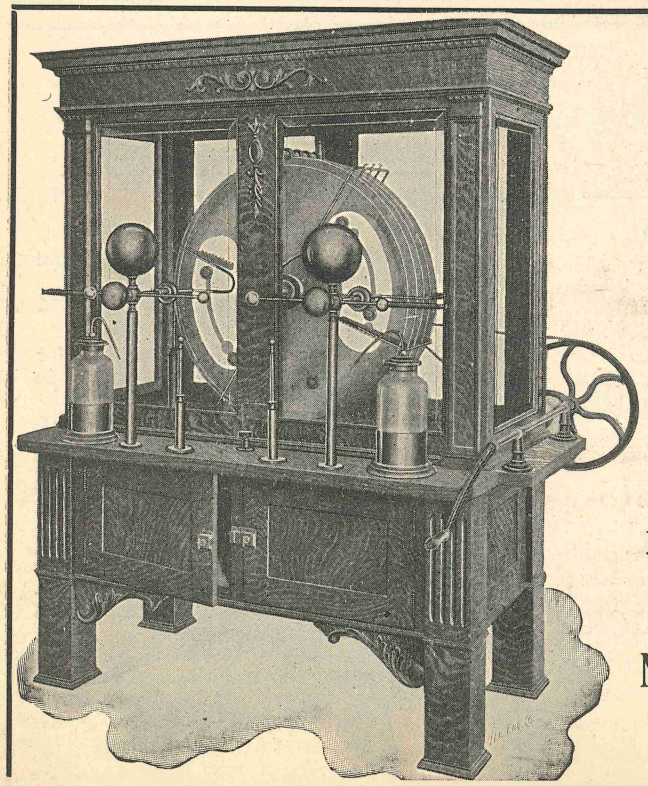

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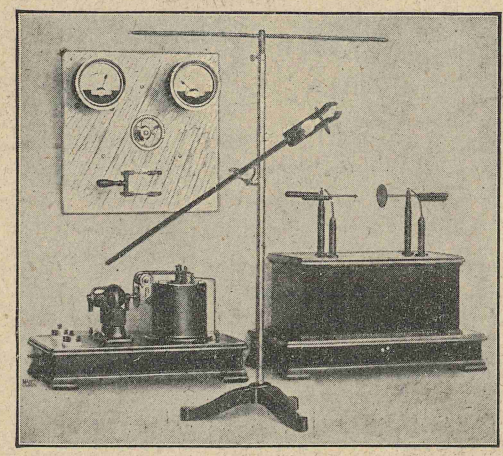

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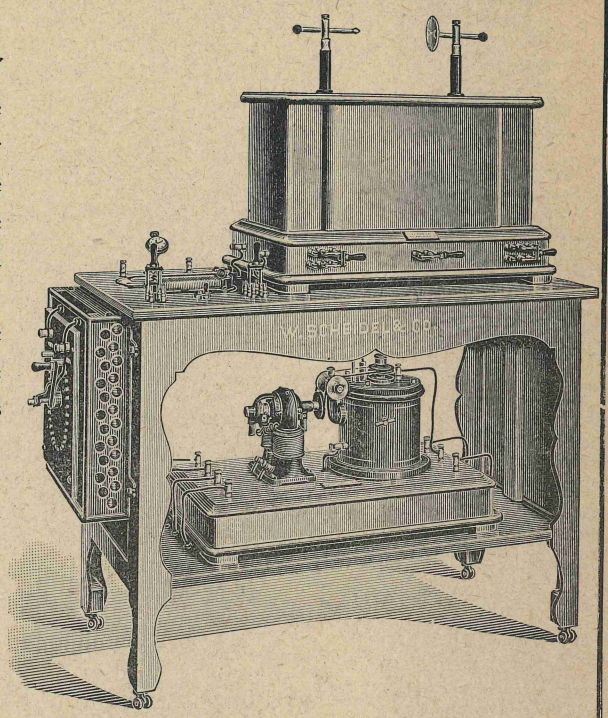

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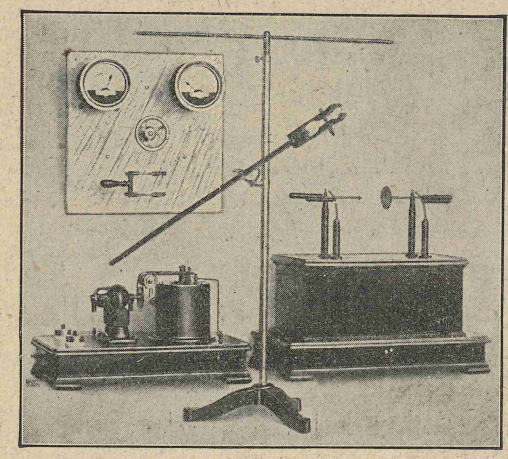

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